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GENERAL INFORMATION:

- (i) APPLICANT: Mukamolova, Galina V. et al.
- (ii) TITLE OF INVENTION: Bacterial Pheromones and Uses Therefor
- (iii) NUMBER OF SEQUENCES: 59
- (iv) CORRESPONDENCE ADDRESS:
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(F) ZIP: 02109-1875
- (v) COMPUTER READABLE FORM:
(A) MEDIUM TYPE: Floppy disk
(B) COMPUTER: IBM PC compatible
(C) OPERATING SYSTEM: PC-DOS/MS-DOS
(D) SOFTWARE: PatentIn Release #1.0; Version #1.25
- (vi) CURRENT APPLICATION DATA:
(A) APPLICATION NUMBER: 09/445,289
(B) FILING DATE: 2000-MAY-11
- (vii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: PCT/GB98/01619
(B) FILING DATE: 03-MAY-1998
- (vii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: GB 9711389.8
(B) FILING DATE: 04-JUN-1997
- (vii) PRIOR APPLICATION DATA:
(A) APPLICATION NUMBER: GB 9811221.2
(B) FILING DATE: 27-MAY-1998
- (viii) ATTORNEY/AGENT INFORMATION:
(A) NAME: Lauro, Peter C.
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(C) REFERENCE/DOCKET NUMBER: FHW-051US
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(2) INFORMATION FOR SEQ ID NO:1:

- (i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 362 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:1:

Met Leu Arg Leu Val Val Gly Ala Leu Leu Leu Val Leu Ala Phe Ala
1 5 10 15
Gly Gly Tyr Ala Val Ala Ala Cys Lys Thr Val Thr Leu Thr Val Asp

20						25						30				
Gly	Thr	Ala	Met	Arg	Val	Thr	Thr	Met	Lys	Ser	Arg	Val	Ile	Asp	Ile	
		35				40						45				
Val	Glu	Glu	Asn	Gly	Phe	Ser	Val	Asp	Asp	Arg	Asp	Asp	Leu	Tyr	Pro	
50						55					60					
Ala	Ala	Gly	Val	Gln	Val	His	Asp	Ala	Asp	Thr	Ile	Val	Leu	Arg	Arg	
65					70					75						
Ser	Arg	Pro	Leu	Gln	Ile	Ser	Leu	Asp	Gly	His	Asp	Ala	Lys	Gln	Val	
				85					90					95		
Trp	Thr	Thr	Ala	Ser	Thr	Val	Asp	Glu	Ala	Leu	Ala	Gln	Leu	Ala	Met	
		100						105					110			
Thr	Asp	Thr	Ala	Pro	Ala	Ala	Ala	Ser	Arg	Ala	Ser	Arg	Val	Pro	Leu	
		115				120						125				
Ser	Gly	Met	Ala	Leu	Pro	Val	Val	Ser	Ala	Lys	Thr	Val	Gln	Leu	Asn	
130						135					140					
Asp	Gly	Gly	Leu	Val	Arg	Thr	Val	His	Leu	Pro	Ala	Pro	Asn	Val	Ala	
145					150					155						
Gly	Leu	Leu	Ser	Ala	Ala	Gly	Val	Pro	Leu	Leu	Gln	Ser	Asp	His	Val	
				165					170					175		
Val	Pro	Ala	Ala	Thr	Ala	Pro	Ile	Val	Glu	Gly	Met	Gln	Ile	Gln	Val	
		180						185					190			
Thr	Arg	Asn	Arg	Ile	Lys	Lys	Val	Thr	Glu	Arg	Leu	Pro	Leu	Pro	Pro	
		195				200						205				
Asn	Ala	Arg	Arg	Val	Glu	Asp	Pro	Glu	Met	Asn	Met	Ser	Arg	Glu	Val	
210						215					220					
Val	Glu	Asp	Pro	Gly	Val	Pro	Gly	Thr	Gln	Asp	Val	Thr	Phe	Ala	Val	
225					230					235						
Ala	Glu	Val	Asn	Gly	Val	Glu	Thr	Gly	Arg	Leu	Pro	Val	Ala	Asn	Val	
				245					250					255		
Val	Val	Thr	Pro	Ala	His	Glu	Ala	Val	Val	Arg	Val	Gly	Thr	Lys	Pro	
		260						265					270			
Gly	Thr	Glu	Val	Pro	Pro	Val	Ile	Asp	Gly	Ser	Ile	Trp	Asp	Ala	Ile	
		275				280						285				
Ala	Gly	Cys	Glu	Ala	Gly	Gly	Asn	Trp	Ala	Ile	Asn	Thr	Gly	Asn	Gly	
290						295					300					
Tyr	Tyr	Gly	Gly	Val	Gln	Phe	Asp	Gln	Gly	Thr	Trp	Glu	Ala	Asn	Gly	
305					310					315						
Gly	Leu	Arg	Tyr	Ala	Pro	Arg	Ala	Asp	Leu	Ala	Thr	Arg	Glu	Glu	Gln	
				325					330					335		
Ile	Ala	Val	Ala	Glu	Val	Thr	Arg	Leu	Arg	Gln	Gly	Trp	Gly	Ala	Trp	
		340						345					350			
Pro	Val	Cys	Ala	Ala	Arg	Ala	Gly	Ala	Arg							:
355						360										

(2) INFORMATION FOR SEQ ID NO:2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 188 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Met	Pro	Val	Gly	Trp	Leu	Trp	Arg	Ala	Arg	Thr	Ala	Lys	Gly	Thr	Thr	1	5	10	15
Leu	Lys	Asn	Ala	Arg	Thr	Thr	Leu	Ile	Ala	Ala	Ala	Ile	Ala	Gly	Thr	20	25	30	
Leu	Val	Thr	Thr	Ser	Pro	Ala	Gly	Ile	Ala	Asn	Ala	Asp	Asp	Ala	Gly	35	40	45	
Leu	Asp	Pro	Asn	Ala	Ala	Ala	Gly	Pro	Asp	Ala	Val	Gly	Phe	Asp	Pro	50	55	60	
Asn	Leu	Pro	Pro	Ala	Pro	Asp	Ala	Ala	Pro	Val	Asp	Thr	Pro	Pro	Ala	65	70	75	80
Pro	Glu	Asp	Ala	Gly	Phe	Asp	Pro	Asn	Leu	Pro	Pro	Pro	Leu	Ala	Pro	85	90	95	
Asp	Phe	Leu	Ser	Pro	Pro	Ala	Glu	Glu	Ala	Pro	Pro	Val	Pro	Val	Ala	100	105	110	
Tyr	Ser	Val	Asn	Trp	Asp	Ala	Ile	Ala	Gln	Cys	Glu	Ser	Gly	Gly	Asn	115	120	125	
Trp	Ser	Ile	Asn	Thr	Gly	Asn	Gly	Tyr	Tyr	Gly	Gly	Leu	Arg	Phe	Thr	130	135	140	
Ala	Gly	Thr	Trp	Arg	Ala	Asn	Gly	Gly	Ser	Gly	Ser	Ala	Ala	Asn	Ala	145	150	155	160
Ser	Arg	Glu	Glu	Gln	Ile	Arg	Val	Ala	Glu	Asn	Val	Leu	Arg	Ser	Gln	165	170	175	
Gly	Ile	Arg	Ala	Trp	Pro	Val	Cys	Gly	Arg	Arg	Gly	180	185						

(2) INFORMATION FOR SEQ ID NO:3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 174 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

Met	Ser	Glu	Ser	Tyr	Arg	Lys	Leu	Thr	Thr	Ser	Ser	Ile	Ile	Val	Ala	1	5	10	15
Lys	Ile	Thr	Phe	Thr	Gly	Ala	Met	Leu	Asp	Gly	Ser	Ile	Ala	Leu	Ala	20	25	30	

Gly	Gln	Ala	Ser	Pro	Ala	Thr	Asp	Ser	Glu	Trp	Asp	Gln	Val	Ala	Arg
		35					40					45			
Cys	Glu	Ser	Gly	Gly	Asn	Trp	Ser	Ile	Asn	Thr	Gly	Asn	Gly	Tyr	Leu
	50					55					60				
Gly	Gly	Leu	Gln	Phe	Ser	Gln	Gly	Thr	Trp	Ala	Ser	His	Gly	Gly	Gly
65					70					75					80
Glu	Tyr	Ala	Pro	Ser	Ala	Gln	Leu	Ala	Thr	Arg	Glu	Gln	Gln	Ile	Ala
				85					90					95	
Val	Ala	Glu	Arg	Val	Leu	Ala	Thr	Gln	Gly	Ser	Gly	Ala	Trp	Pro	Ala
			100					105					110		
Cys	Gly	His	Gly	Leu	Ser	Gly	Pro	Ser	Leu	Gln	Glu	Val	Leu	Pro	Ala
		115					120					125			
Gly	Met	Gly	Ala	Pro	Trp	Ile	Asn	Gly	Ala	Pro	Ala	Pro	Leu	Ala	Pro
	130					135					140				
Pro	Pro	Pro	Ala	Glu	Pro	Ala	Pro	Pro	Gln	Pro	Pro	Ala	Asp	Asn	Phe
145					150					155					160
Pro	Pro	Thr	Pro	Gly	Asp	Val	Pro	Ser	Pro	Leu	Ala	Arg	Pro		
				165					170						

(2) INFORMATION FOR SEQ ID NO:4:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 407 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

Met	Ser	Gly	Arg	His	Arg	Lys	Pro	Thr	Thr	Ser	Asn	Val	Ser	Val	Ala
1				5					10					15	
Lys	Ile	Ala	Phe	Thr	Gly	Ala	Val	Leu	Gly	Gly	Gly	Gly	Ile	Ala	Met
			20					25					30		
Ala	Ala	Gln	Ala	Thr	Ala	Ala	Thr	Asp	Gly	Glu	Trp	Asp	Gln	Val	Ala
		35					40					45			
Arg	Cys	Glu	Ser	Gly	Gly	Asn	Trp	Ser	Ile	Asn	Thr	Gly	Asn	Gly	Tyr
	50					55					60				
Leu	Gly	Gly	Leu	Gln	Phe	Thr	Gln	Ser	Thr	Trp	Ala	Ala	His	Gly	Gly
65				70						75					80
Gly	Glu	Phe	Ala	Pro	Ser	Ala	Gln	Leu	Ala	Ser	Arg	Glu	Gln	Gln	Ile
				85					90					95	
Ala	Val	Gly	Glu	Arg	Val	Leu	Ala	Thr	Gln	Gly	Arg	Gly	Ala	Trp	Pro
			100					105					110		
Val	Cys	Gly	Arg	Gly	Leu	Ser	Asn	Ala	Thr	Pro	Arg	Glu	Val	Leu	Pro
		115					120					125			
Ala	Ser	Ala	Ala	Met	Asp	Ala	Pro	Leu	Asp	Ala	Ala	Ala	Val	Asn	Gly

130	135	140
Glu Pro Ala Pro Leu Ala Pro Pro Pro Ala Asp Pro Ala Pro Pro Val 145 150 155 160		
Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro 165 170 175		
Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala 180 185 190		
Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro 195 200 205		
Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro 210 215 220		
Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala 225 230 235 240		
Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Val 245 250 255		
Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro 260 265 270		
Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu Ala Pro Ala Ser 275 280 285		
Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro 290 295 300		
Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Ala 305 310 315 320		
Val Asn Glu Gln Thr Ala Pro Gly Asp Gln Pro Ala Thr Ala Pro Gly 325 330 335		
Gly Pro Val Gly Leu Ala Thr Asp Leu Glu Leu Pro Glu Pro Asp Pro 340 345 350		
Gln Pro Ala Asp Ala Pro Pro Pro Gly Asp Val Thr Glu Ala Pro Ala 355 360 365		
Glu Thr Pro Gln Val Ser Asn Ile Ala Tyr Thr Lys Lys Leu Trp Gln 370 375 380		
Ala Ile Arg Ala Gln Asp Val Cys Gly Asn Asp Ala Leu Asp Ser Leu 385 390 395 400		
Ala Gln Pro Tyr Val Ile Gly 405		

(2) INFORMATION FOR SEQ ID NO:5:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 155 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:5:

Met	Pro	Gly	Glu	Met	Leu	Asp	Val	Arg	Lys	Leu	Cys	Lys	Leu	Phe	Val
1				5					10					15	
Lys	Ser	Ala	Val	Val	Ser	Gly	Ile	Val	Thr	Ala	Ser	Met	Ala	Leu	Ser
			20					25					30		
Thr	Ser	Thr	Gly	Met	Ala	Asn	Ala	Val	Pro	Arg	Glu	Pro	Asn	Trp	Asp
		35					40					45			
Ala	Val	Ala	Gln	Cys	Glu	Ser	Gly	Arg	Asn	Trp	Arg	Ala	Asn	Thr	Gly
	50					55					60				
Asn	Gly	Phe	Tyr	Gly	Gly	Leu	Gln	Phe	Lys	Pro	Thr	Ile	Trp	Ala	Arg
65					70					75					80
Tyr	Gly	Gly	Val	Gly	Asn	Pro	Ala	Gly	Ala	Ser	Arg	Glu	Gln	Gln	Ile
				85					90					95	
Thr	Val	Ala	Asn	Arg	Val	Leu	Ala	Asp	Gln	Gly	Leu	Asp	Ala	Trp	Pro
			100					105					110		
Lys	Cys	Gly	Ala	Ala	Ser	Asp	Leu	Pro	Ile	Thr	Leu	Trp	Ser	His	Pro
		115					120					125			
Ala	Gln	Gly	Val	Lys	Gln	Ile	Ile	Asn	Asp	Ile	Ile	Gln	Met	Gly	Asp
	130					135					140				
Thr	Thr	Leu	Ala	Ala	Ile	Ala	Leu	Asn	Gly	Leu					
145					150					155					

(2) INFORMATION FOR SEQ ID NO:6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 176 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:6:

Met	His	Pro	Leu	Pro	Ala	Asp	His	Gly	Arg	Ser	Arg	Cys	Asn	Arg	His
1				5					10					15	
Pro	Ile	Ser	Pro	Leu	Ser	Leu	Ile	Gly	Asn	Ile	Ser	Ala	Thr	Ser	Gly
			20					25					30		
Asp	Met	Ser	Ser	Met	Thr	Arg	Ile	Ala	Lys	Pro	Leu	Ile	Lys	Ser	Ala
		35					40					45			
Met	Ala	Ala	Gly	Leu	Val	Thr	Ala	Ser	Met	Ser	Leu	Ser	Thr	Ala	Val
	50					55					60				
Ala	His	Ala	Gly	Pro	Ser	Pro	Asn	Trp	Asp	Ala	Val	Ala	Gln	Cys	Glu
65					70				75						80
Ser	Gly	Gly	Asn	Trp	Ala	Ala	Asn	Thr	Gly	Asn	Gly	Lys	Tyr	Gly	Gly
			85						90					95	
Leu	Gln	Phe	Lys	Pro	Ala	Thr	Trp	Ala	Ala	Phe	Gly	Gly	Val	Gly	Asn
			100					105					110		
Pro	Ala	Ala	Ala	Ser	Arg	Glu	Gln	Gln	Ile	Ala	Val	Ala	Asn	Arg	Val
	115						120					125			

Leu	Ala	Glu	Gln	Gly	Leu	Asp	Ala	Trp	Pro	Thr	Cys	Gly	Ala	Ala	Ser
130						135					140				
Gly	Leu	Pro	Ile	Ala	Leu	Trp	Ser	Lys	Pro	Ala	Gln	Gly	Ile	Lys	Gln
145					150					155					160
Ile	Ile	Asn	Glu	Ile	Ile	Trp	Ala	Gly	Ile	Gln	Ala	Ser	Ile	Pro	Arg
				165					170					175	

(2) INFORMATION FOR SEQ ID NO:7:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 154 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Met	Thr	Pro	Gly	Leu	Leu	Thr	Thr	Ala	Gly	Ala	Gly	Arg	Pro	Arg	Asp
1				5					10					15	
Arg	Cys	Ala	Arg	Ile	Val	Cys	Thr	Val	Phe	Ile	Glu	Thr	Ala	Val	Val
			20					25					30		
Ala	Thr	Met	Phe	Val	Ala	Leu	Leu	Gly	Leu	Ser	Thr	Ile	Ser	Ser	Lys
		35					40					45			
Ala	Asp	Asp	Ile	Asp	Trp	Asp	Ala	Ile	Ala	Gln	Cys	Glu	Ser	Gly	Gly
	50					55					60				
Asn	Trp	Ala	Ala	Asn	Thr	Gly	Asn	Gly	Leu	Tyr	Gly	Gly	Leu	Gln	Ile
65					70					75					80
Ser	Gln	Ala	Thr	Trp	Asp	Ser	Asn	Gly	Gly	Val	Gly	Ser	Pro	Ala	Ala
				85					90					95	
Ala	Ser	Pro	Gln	Gln	Gln	Ile	Glu	Val	Ala	Asp	Asn	Ile	Met	Lys	Thr
			100					105					110		
Gln	Gly	Pro	Gly	Ala	Trp	Pro	Lys	Cys	Ser	Ser	Cys	Ser	Gln	Gly	Asp
		115					120					125			
Ala	Pro	Leu	Gly	Ser	Leu	Thr	His	Ile	Leu	Thr	Phe	Leu	Ala	Ala	Glu
	130					135					140				
Thr	Gly	Gly	Cys	Ser	Gly	Ser	Arg	Asp	Asp						
145					150										

(2) INFORMATION FOR SEQ ID NO:8:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 99 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:

Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly Ala

1		5		10		15									
Thr	Gly	Glu	Ala	Val	Ala	Ala	Pro	Ser	Ala	Pro	Leu	Arg	Thr	Asp	Trp
			20					25					30		
Asp	Ala	Ile	Ala	Ala	Cys	Glu	Ser	Ser	Gly	Asn	Trp	Gln	Ala	Asn	Thr
		35					40					45			
Gly	Asn	Gly	Tyr	Tyr	Gly	Gly	Leu	Gln	Phe	Ala	Arg	Ser	Ser	Trp	Ile
	50					55					60				
Ala	Ala	Gly	Gly	Leu	Lys	Tyr	Ala	Pro	Arg	Ala	Asp	Leu	Ala	Thr	Arg
65					70					75					80
Gly	Glu	Gln	Ile	Ala	Val	Ala	Glu	Arg	Leu	Ala	Arg	Leu	Gln	Gly	Met
				85					90					95	
Ser	Ala	Trp													

(2) INFORMATION FOR SEQ ID NO:9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 438 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:

Met	Gly	Glu	Arg	Glu	Gly	Arg	Val	Asp	Ser	Leu	Leu	Asp	Thr	Leu	Tyr
1				5					10					15	
Asn	Leu	Ser	Glu	Glu	Lys	Glu	Ala	Phe	Phe	Ile	Thr	Gln	Lys	Met	Lys
			20					25					30		
Lys	Leu	Phe	Ser	Val	Lys	Leu	Ser	Lys	Ser	Lys	Val	Ile	Leu	Val	Ala
		35					40					45			
Ala	Cys	Leu	Leu	Leu	Ala	Gly	Ser	Gly	Thr	Ala	Tyr	Ala	Ala	His	Glu
	50					55					60				
Leu	Thr	Lys	Gln	Ser	Val	Ser	Val	Ser	Ile	Asn	Gly	Lys	Lys	Lys	His
65					70				75						80
Ile	Arg	Thr	His	Ala	Asn	Thr	Val	Gly	Asp	Leu	Leu	Glu	Thr	Leu	Asp
				85					90					95	
Ile	Lys	Thr	Arg	Asp	Glu	Asp	Lys	Ile	Thr	Pro	Ala	Lys	Gln	Thr	Lys
			100					105					110		
Ile	Thr	Ala	Asp	Met	Asp	Val	Val	Tyr	Glu	Ala	Ala	Lys	Pro	Val	Lys
		115					120					125			
Leu	Thr	Ile	Asn	Gly	Glu	Glu	Lys	Thr	Leu	Trp	Ser	Thr	Ala	Lys	Thr
	130					135					140				
Val	Gly	Ala	Leu	Leu	Asp	Glu	Gln	Asp	Val	Asp	Val	Lys	Glu	Gln	Asp
145					150					155					160
Gln	Ile	Asp	Pro	Ala	Ile	Asp	Thr	Asp	Ile	Ser	Lys	Asp	Met	Lys	Ile
				165					170					175	

Asn	Ile	Glu	Pro	Ala	Phe	Gln	Val	Thr	Val	Asn	Asp	Ala	Gly	Lys	Gln	180	185	190
Lys	Lys	Ile	Trp	Thr	Thr	Ser	Thr	Thr	Val	Ala	Asp	Phe	Leu	Lys	Gln	195	200	205
Gln	Lys	Met	Asn	Ile	Lys	Asp	Glu	Asp	Lys	Ile	Lys	Pro	Ala	Leu	Asp	210	215	220
Ala	Lys	Leu	Thr	Lys	Gly	Lys	Ala	Asp	Ile	Thr	Ile	Thr	Arg	Ile	Glu	225	230	235
Lys	Val	Thr	Asp	Val	Val	Glu	Glu	Lys	Ile	Ala	Phe	Asp	Val	Lys	Lys	245	250	255
Gln	Glu	Asp	Ala	Ser	Leu	Glu	Lys	Gly	Lys	Glu	Lys	Val	Val	Gln	Lys	260	265	270
Gly	Lys	Glu	Gly	Lys	Leu	Lys	Lys	His	Phe	Glu	Val	Val	Lys	Glu	Asn	275	280	285
Gly	Lys	Glu	Val	Ser	Arg	Glu	Leu	Val	Lys	Glu	Glu	Thr	Ala	Glu	Gln	290	295	300
Ser	Lys	Asp	Lys	Val	Ile	Ala	Val	Gly	Thr	Lys	Gln	Ser	Ser	Pro	Lys	305	310	315
Phe	Glu	Thr	Val	Ser	Ala	Ser	Gly	Asp	Ser	Lys	Thr	Val	Val	Ser	Arg	325	330	335
Ser	Asn	Glu	Ser	Thr	Gly	Lys	Val	Met	Thr	Val	Ser	Ser	Thr	Ala	Tyr	340	345	350
Thr	Ala	Ser	Cys	Ser	Gly	Cys	Ser	Gly	His	Thr	Ala	Thr	Gly	Val	Asn	355	360	365
Leu	Lys	Asn	Asn	Pro	Asn	Ala	Lys	Val	Ile	Ala	Val	Asp	Pro	Asn	Val	370	375	380
Ile	Pro	Leu	Gly	Ser	Lys	Val	His	Val	Glu	Gly	Tyr	Gly	Tyr	Ala	Ile	385	390	395
Ile	Ala	Ala	Asp	Thr	Gly	Ser	Ala	Ile	Lys	Gly	Asn	Lys	Ile	Asp	Val	405	410	415
Phe	Phe	Pro	Ser	Lys	Ser	Asp	Ala	Ser	Asn	Trp	Gly	Val	Lys	Thr	Val	420	425	430
Ser	Val	Lys	Val	Leu	Asn											435		

(2) INFORMATION FOR SEQ ID NO:10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 288 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:

Met	Lys	Lys	Thr	Ile	Met	Ser	Phe	Val	Ala	Val	Ala	Ala	Leu	Ser	Thr	1	5	10	15
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	---	---	----	----

Thr	Ala	Phe	Gly	Ala	His	Ala	Ser	Ala	Lys	Glu	Ile	Thr	Val	Gln	Lys	20	25	30
Gly	Asp	Thr	Leu	Trp	Gly	Ile	Ser	Gln	Lys	Asn	Gly	Val	Asn	Leu	Lys	35	40	45
Asp	Leu	Lys	Glu	Trp	Asn	Lys	Leu	Thr	Ser	Asp	Lys	Ile	Ile	Ala	Gly	50	55	60
Glu	Lys	Leu	Thr	Ile	Ser	Ser	Glu	Glu	Thr	Thr	Thr	Thr	Gly	Gln	Tyr	65	70	75
Thr	Ile	Lys	Ala	Gly	Asp	Thr	Leu	Ser	Lys	Ile	Ala	Gln	Lys	Phe	Gly	85	90	95
Thr	Thr	Val	Asn	Asn	Leu	Lys	Val	Trp	Asn	Asn	Leu	Ser	Ser	Asp	Met	100	105	110
Ile	Tyr	Ala	Gly	Ser	Thr	Leu	Ser	Val	Lys	Gly	Gln	Ala	Thr	Ala	Ala	115	120	125
Asn	Thr	Ala	Thr	Glu	Asn	Ala	Gln	Thr	Asn	Ala	Pro	Gln	Ala	Ala	Pro	130	135	140
Lys	Gln	Glu	Ala	Val	Gln	Lys	Glu	Gln	Pro	Lys	Gln	Glu	Ala	Val	Gln	145	150	155
Gln	Gln	Pro	Lys	Gln	Glu	Thr	Lys	Ala	Glu	Ala	Glu	Thr	Ser	Val	Asn	165	170	175
Thr	Glu	Glu	Lys	Ala	Val	Gln	Ser	Asn	Thr	Asn	Asn	Gln	Glu	Ala	Ser	180	185	190
Lys	Glu	Leu	Thr	Val	Thr	Ala	Thr	Ala	Tyr	Thr	Ala	Asn	Asp	Gly	Gly	195	200	205
Ile	Ser	Gly	Val	Thr	Ala	Thr	Gly	Ile	Asp	Leu	Asn	Lys	Asn	Pro	Asn	210	215	220
Ala	Lys	Val	Ile	Ala	Val	Asp	Pro	Asn	Val	Ile	Pro	Leu	Gly	Ser	Lys	225	230	235
Val	Tyr	Val	Glu	Gly	Tyr	Gly	Glu	Ala	Thr	Thr	Ala	Ala	Asp	Thr	Gly	245	250	255
Gly	Ala	Ile	Lys	Gly	Asn	Lys	Ile	Asp	Val	Phe	Val	Pro	Glu	Lys	Ser	260	265	270
Ser	Ala	Tyr	Arg	Trp	Gly	Asn	Lys	Thr	Val	Lys	Ile	Lys	Ile	Leu	Asn	275	280	285

(2) INFORMATION FOR SEQ ID NO:11:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 320 amino acids
 - (B) TYPE: amino acid
 - (D)* TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:

Lys	Arg	Xaa	Xaa	Ala	Val	Ile	Leu	Met	Val	Ala	Val	Ile	Phe	Thr	Ile	
1				5					10					15		
Ile	Ser	Ser	Met	Lys	Lys	Asn	Ile	Thr	Val	Asn	Ile	Asp	Gly	Lys	Thr	
			20					25					30			
Ser	Lys	Ile	Ile	Thr	Tyr	Lys	Ser	Asn	Glu	Gly	Ser	Ile	Leu	Ser	Lys	
		35					40					45				
Asn	Asn	Ile	Leu	Val	Gly	Pro	Lys	Asp	Lys	Ile	Gln	Pro	Ala	Leu	Asp	
	50					55					60					
Thr	Asn	Leu	Lys	Asn	Gly	Asp	Lys	Ile	Tyr	Ile	Lys	Lys	Ala	Ile	Ser	
65					70					75					80	
Val	Glu	Val	Ala	Val	Asp	Gly	Lys	Val	Arg	Arg	Val	Lys	Ser	Ser	Glu	
				85					90					95		
Glu	Thr	Val	Ser	Lys	Met	Leu	Lys	Ala	Glu	Lys	Ile	Pro	Leu	Ser	Lys	
			100					105					110			
Val	Asp	Lys	Val	Asn	Ile	Ser	Arg	Asn	Ala	Ala	Ile	Lys	Lys	Asn	Met	
		115					120					125				
Lys	Ile	Ser	Ile	Thr	Arg	Val	Asn	Ser	Gln	Ile	Thr	Lys	Glu	Asn	Gln	
	130					135					140					
Gln	Val	Asp	Phe	Pro	Thr	Glu	Val	Ile	Ser	Asp	Asp	Ser	Met	Gly	Asn	
145					150					155					160	
Asp	Glu	Lys	Gln	Val	Ile	Gln	Gln	Gly	Gln	Ala	Gly	Glu	Lys	Glu	Val	
			165					170						175		
Phe	Thr	Lys	Ile	Val	Tyr	Glu	Asp	Gly	Lys	Ala	Val	Ser	Lys	Glu	Ile	
			180					185					190			
Val	Gly	Glu	Val	Ile	Lys	Lys	Glu	Pro	Thr	Lys	Gln	Val	Phe	Lys	Val	
		195					200					205				
Gly	Thr	Leu	Gly	Val	Leu	Lys	Pro	Asp	Arg	Gly	Gly	Arg	Val	Leu	Tyr	
	210					215					220					
Lys	Lys	Ser	Leu	Gln	Val	Leu	Ala	Thr	Ala	Tyr	Thr	Asp	Asp	Phe	Ser	
225					230					235					240	
Phe	Gly	Ile	Thr	Ala	Ser	Gly	Thr	Lys	Val	Lys	Arg	Asp	Ser	Asp	Gly	
				245					250					255		
Tyr	Ser	Ser	Ile	Ala	Val	Asp	Pro	Thr	Val	Ile	Pro	Leu	Gly	Thr	Lys	
			260					265					270			
Leu	Tyr	Val	Pro	Gly	Tyr	Gly	Tyr	Gly	Val	Val	Ala	Glu	Asp	Thr	Gly	
		275					280					285				
Gly	Ala	Ile	Lys	Gly	Asn	Arg	Leu	Asp	Leu	Phe	Phe	Thr	Ser	Glu	Arg	
	290					295					300					
Glu	Cys	Tyr	Asp	Trp	Gly	Ala	Lys	Asn	Val	Thr	Val	Tyr	Ile	Leu	Lys	
305					310					315					320	

(2) INFORMATION FOR SEQ ID NO:12:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 81 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:

Ala Glu Ala Tyr Thr Ala Ser Gly Met His Val Leu Arg Asp Pro Asn
1 5 10 15
Gly Tyr Ser Thr Ile Ala Val Asp Pro Ser Val Ile Pro Leu Gly Thr
20 25 30
Lys Leu Tyr Val Glu Gly Tyr Gly Tyr Ala Ile Ile Ala Ala Asp Thr
35 40 45
Gly Gly Ala Ile Lys Gly Asn Arg Val Asp Leu Phe Phe Asn Thr Glu
50 55 60
Ala Glu Ala Ser Asn Trp Gly Val Arg Asn Leu Asp Val Tyr Ile Leu
65 70 75 80
Asn

(2) INFORMATION FOR SEQ ID NO:13:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 51 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:13:

Thr Ile Val Val Lys Ser Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu
1 5 10 15
Tyr Glu Val Glu Gly Gly Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly
20 25 30
Ala Val Ser Asp Ala Ala Val Ile Tyr Val Gly Gln Glu Leu Val Leu
35 40 45
Pro Gln Ala
50

(2) INFORMATION FOR SEQ ID NO:14:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 46 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:14:

Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ser Arg Gln
1 5 10 15
Tyr Asp Thr Thr Ile Ser Ala Leu Lys Ser Glu Asn Lys Leu Lys Ser

20	25	30
Thr Val Leu Tyr Val Gly Gln Ser	Leu Lys Val Pro Glu Ser	
35	40	45

(2) INFORMATION FOR SEQ ID NO:15:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 44 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:

Thr Ile Lys Val Lys Ser Gly Asp Ser Leu Trp Lys Leu Ala Gln Thr	
1	5 10 15
Tyr Asn Thr Ser Val Ala Ala Leu Thr Ser Ala Asn His Leu Ser Thr	
	20 25 30
Thr Val Leu Ser Ile Gly Gln Thr Leu Thr Ile Pro	
	35 40

(2) INFORMATION FOR SEQ ID NO:16:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 43 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:

Thr Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Val Ile Ala Gln Lys	
1	5 10 15
Phe Asn Val Thr Ala Gln Gln Ile Arg Glu Lys Asn Asn Leu Lys Thr	
	20 25 30
Asp Val Leu Gln Val Gly Gln Lys Leu Val Ile	
	35 40

(2) INFORMATION FOR SEQ ID NO:17:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 43 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:

Lys Tyr Thr Val Lys Ser Gly Asp Ser Leu Trp Lys Ile Ala Asn Asn	
1	5 10 15
Ile Asn Leu Thr Val Gln Gln Ile Arg Asn Ile Asn Asn Leu Lys Ser	
	20 25 30
Asp Val Leu Tyr Val Gly Gln Val Leu Lys Leu	
	35 40

(2) INFORMATION FOR SEQ ID NO:18:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 45 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:18:

Thr	Tyr	Thr	Val	Lys	Ser	Gly	Asp	Thr	Ile	Trp	Ala	Leu	Ser	Ser	Lys
1				5				10					15		
Tyr	Gly	Thr	Ser	Val	Gln	Asn	Ile	Met	Ser	Trp	Asn	Asn	Leu	Ser	Ser
			20					25					30		
Ser	Ser	Ile	Tyr	Val	Gly	Gln	Val	Leu	Ala	Val	Lys	Gln			
		35					40					45			

(2) INFORMATION FOR SEQ ID NO:19:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 45 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:

Thr	His	Ala	Val	Lys	Ser	Gly	Asp	Thr	Ile	Trp	Ala	Leu	Ser	Val	Lys
1				5				10					15		
Tyr	Gly	Val	Ser	Val	Gln	Asp	Ile	Met	Ser	Trp	Asn	Asn	Leu	Ser	Ser
			20					25					30		
Ser	Ser	Ile	Tyr	Val	Gly	Gln	Lys	Leu	Ala	Ile	Lys	Gln			
		35					40					45			

(2) INFORMATION FOR SEQ ID NO:20:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 46 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:

Ser	Val	Lys	Val	Lys	Ser	Gly	Asp	Thr	Leu	Trp	Ala	Leu	Ser	Val	Lys
1				5				10					15		
Tyr	Lys	Thr	Ser	Ile	Ala	Gln	Leu	Lys	Ser	Trp	Asn	His	Leu	Ser	Ser
			20					25					30		
Asp	Thr	Ile	Tyr	Ile	Gly	Gln	Asn	Leu	Ile	Val	Ser	Gln	Ser		
		35					40					45			

(2) INFORMATION FOR SEQ ID NO:21:

- (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 43 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:

Thr	Tyr	Thr	Val	Lys	Ser	Gly	Asp	Thr	Leu	Trp	Gly	Ile	Ser	Gln	Arg
1				5					10					15	
Tyr	Gly	Ile	Ser	Val	Ala	Gln	Ile	Gln	Ser	Ala	Asn	Asn	Leu	Lys	Ser
			20					25					30		
Thr	Ile	Ile	Tyr	Ile	Gly	Gln	Lys	Leu	Leu	Leu					
		35					40								

(2) INFORMATION FOR SEQ ID NO:22:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 60 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:

Thr	Tyr	Thr	Val	Lys	Lys	Gly	Asp	Thr	Leu	Trp	Asp	Ile	Ala	Gly	Arg
1				5					10					15	
Phe	Tyr	Gly	Asn	Ser	Thr	Gln	Trp	Arg	Lys	Ile	Trp	Asn	Ala	Asn	Lys
			20					25					30		
Thr	Ala	Met	Ile	Lys	Arg	Ser	Lys	Arg	Asn	Ile	Arg	Gln	Pro	Gly	His
		35					40					45			
Trp	Ile	Phe	Pro	Gly	Gln	Lys	Leu	Lys	Ile	Pro	Gln				
	50					55					60				

(2) INFORMATION FOR SEQ ID NO:23:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 60 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:

Thr	Tyr	Thr	Val	Lys	Lys	Gly	Asp	Thr	Leu	Trp	Asp	Leu	Ala	Gly	Lys
1				5					10					15	
Phe	Tyr	Gly	Asp	Ser	Thr	Lys	Trp	Arg	Lys	Ile	Trp	Lys	Val	Asn	Lys
			20					25					30		
Lys	Ala	Met	Ile	Lys	Arg	Ser	Lys	Arg	Asn	Ile	Arg	Gln	Pro	Gly	His
		35					40					45			
Trp	Ile	Phe	Pro	Gly	Gln	Lys	Leu	Lys	Ile	Pro	Gln				
	50					55					60				

(2) INFORMATION FOR SEQ ID NO:24:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 167 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:

```

Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu Pro Ala Pro Leu Gly
1           5           10           15

Glu Pro Leu Pro Ala Ala Pro Ala Asp Pro Ala Pro Pro Ala Asp Leu
          20           25           30

Ala Pro Pro Ala Pro Ala Asp Val Ala Pro Pro Val Glu Leu Ala Val
          35           40           45

Asn Asp Leu Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala
50           55           60

Asp Pro Ala Pro Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
65           70           75           80

Ala Pro Pro Ala Pro Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu
          85           90           95

Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu Pro Ala Pro Leu Gly
          100           105           110

Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu Ala Pro Pro Ala Asp Leu
115           120           125

Ala Pro Ala Ser Ala Asp Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
130           135           140

Pro Pro Ala Pro Ala Glu Leu Ala Pro Pro Ala Pro Ala Asp Leu Ala
145           150           155           160

Pro Pro Ala Ala Val Asn Glu
          165

```

(2) INFORMATION FOR SEQ ID NO:25:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:

```

Ala Pro Pro Val Glu Leu Ala Ala Asn Asp Leu
1           5           10

```

(2) INFORMATION FOR SEQ ID NO:26:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 11 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:

Ala Pro Pro Val Glu Leu Ala Val Asn Asp Leu
1 5 10

(2) INFORMATION FOR SEQ ID NO:27:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:

Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Asp Leu
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:28:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 15 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:

Pro Ala Pro Leu Gly Glu Pro Leu Pro Ala Ala Pro Ala Glu Leu
1 5 10 15

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 7 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:

Pro Ala Pro Pro Ala Asp Leu
1 5

(2) INFORMATION FOR SEQ ID NO:30:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 8 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:

Ala Pro Pro Ala Pro Ala Asp Leu
1 5

(2) INFORMATION FOR SEQ ID NO:31:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 8 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:

Ala Pro Pro Ala Pro Ala Asp Val
1 5

(2) INFORMATION FOR SEQ ID NO:32:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 8 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:32:

Ala Pro Pro Ala Pro Ala Glu Leu
1 5

(2) INFORMATION FOR SEQ ID NO:33:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 8 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Ala Pro Pro Ala Pro Ala Glu Val
1 5

(2) INFORMATION FOR SEQ ID NO:34:

- (i) SEQUENCE CHARACTERISTICS:
 (A) LENGTH: 478 amino acids
 (B) TYPE: amino acid
 (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:

Met Asn Met Lys Lys Ala Thr Ile Ala Ala Thr Ala Gly Ile Ala Val
1 5 10 15

Thr Ala Phe Ala Ala Pro Thr Ile Ala Ser Ala Ser Thr Val Val Val
 20 25 30

Glu Ala Gly Asp Thr Leu Trp Gly Ile Ala Gln Ser Lys Gly Thr Thr
 35 40 45

Val Asp Ala Ile Lys Lys Ala Asn Asn Leu Thr Thr Asp Lys Ile Val
50 55 60

Pro	Gly	Gln	Lys	Leu	Gln	Val	Asn	Asn	Glu	Val	Ala	Ala	Ala	Glu	Lys	65	70	75	80
Thr	Glu	Lys	Ser	Val	Ser	Ala	Thr	Trp	Leu	Asn	Val	Arg	Thr	Gly	Ala	85	90	95	
Gly	Val	Asp	Asn	Ser	Ile	Ile	Thr	Ser	Ile	Lys	Gly	Gly	Thr	Lys	Val	100	105	110	
Thr	Val	Glu	Thr	Thr	Glu	Ser	Asn	Gly	Trp	His	Lys	Ile	Thr	Tyr	Asn	115	120	125	
Asp	Gly	Lys	Thr	Gly	Phe	Val	Asn	Gly	Lys	Tyr	Leu	Thr	Asp	Lys	Ala	130	135	140	
Val	Ser	Thr	Pro	Val	Ala	Pro	Thr	Gln	Glu	Val	Lys	Lys	Glu	Thr	Thr	145	150	155	160
Thr	Gln	Gln	Ala	Ala	Pro	Val	Ala	Glu	Thr	Lys	Thr	Glu	Val	Lys	Gln	165	170	175	
Thr	Thr	Gln	Ala	Thr	Thr	Pro	Ala	Pro	Lys	Val	Ala	Glu	Thr	Lys	Glu	180	185	190	
Thr	Pro	Val	Ile	Asp	Gln	Asn	Ala	Thr	Thr	His	Ala	Val	Lys	Ser	Gly	195	200	205	
Asp	Thr	Ile	Trp	Ala	Leu	Ser	Val	Lys	Tyr	Gly	Val	Ser	Val	Gln	Asp	210	215	220	
Ile	Met	Ser	Trp	Asn	Asn	Leu	Ser	Ser	Ser	Ser	Ile	Tyr	Val	Gly	Gln	225	230	235	240
Lys	Leu	Ala	Ile	Lys	Gln	Thr	Ala	Asn	Thr	Ala	Thr	Pro	Lys	Ala	Glu	245	250	255	
Val	Lys	Thr	Glu	Ala	Pro	Ala	Ala	Glu	Lys	Gln	Ala	Ala	Pro	Val	Val	260	265	270	
Lys	Glu	Asn	Thr	Asn	Thr	Asn	Thr	Ala	Thr	Thr	Glu	Lys	Lys	Glu	Thr	275	280	285	
Ala	Thr	Gln	Gln	Gln	Thr	Ala	Pro	Lys	Ala	Pro	Thr	Glu	Ala	Ala	Lys	290	295	300	
Pro	Ala	Pro	Ala	Pro	Ser	Thr	Asn	Thr	Asn	Ala	Asn	Lys	Thr	Asn	Thr	305	310	315	320
Asn	Thr	Asn	Thr	Asn	Asn	Thr	Asn	Thr	Pro	Ser	Lys	Asn	Thr	Asn	Thr	325	330	335	
Asn	Ser	Asn	Thr	Asn	Thr	Asn	Thr	Asn	Ser	Asn	Thr	Asn	Ala	Asn	Gln	340	345	350	
Gly	Ser	Ser	Asn	Asn	Asn	Ser	Asn	Ser	Ser	Ala	Ser	Ala	Ile	Ile	Ala	355	360	365	
Glu	Ala	Gln	Lys	His	Leu	Gly	Lys	Ala	Tyr	Ser	Trp	Gly	Gly	Asn	Gly	370	375	380	
Pro	Thr	Thr	Phe	Asp	Cys	Ser	Gly	Tyr	Thr	Lys	Tyr	Val	Phe	Ala	Lys	385	390	395	400
Ala	Gly	Ile	Ser	Leu	Pro	Arg	Thr	Ser	Gly	Ala	Gln	Tyr	Ala	Ser	Thr				

				405					410					415		
Thr	Arg	Ile	Ser	Glu	Ser	Gln	Ala	Lys	Pro	Gly	Asp	Leu	Val	Phe	Phe	
			420					425					430			
Asp	Tyr	Gly	Ser	Gly	Ile	Ser	His	Val	Gly	Ile	Tyr	Val	Gly	Asn	Gly	
		435					440					445				
Gln	Met	Ile	Asn	Ala	Gln	Asp	Asn	Gly	Val	Lys	Tyr	Asp	Asn	Ile	His	
	450					455					460					
Gly	Ser	Gly	Trp	Gly	Lys	Tyr	Leu	Val	Gly	Phe	Gly	Arg	Val			
465					470					475						

(2) INFORMATION FOR SEQ ID NO:35:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 758 base pairs
(B) TYPE: nucleic acid
(C) STRANDEDNESS: double
(D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: CDS
(B) LOCATION: 66..728

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:

ACCAAGGAGA	AGGACGACCC	CGGTGTGCCT	CGGCCGCCGA	TCAGCGAGGA	CTCGCCATGG		60									
ACACC	ATG	ACT	CTC	TTC	ACC	ACT	TCC	GCC	ACC	CGC	TCC	CGC	CGT	GCC		107
	Met	Thr	Leu	Phe	Thr	Thr	Ser	Ala	Thr	Arg	Ser	Arg	Arg	Ala		
	1					5				10						
ACC	GCC	TCG	ATC	GTC	GCG	GGC	ATG	ACC	CTC	GCC	GGC	GCC	GCC	GCC	GTG	155
Thr	Ala	Ser	Ile	Val	Ala	Gly	Met	Thr	Leu	Ala	Gly	Ala	Ala	Ala	Val	
	15				20					25					30	
GGC	TTC	TCC	GCC	CCG	GCC	CAG	GCC	GCC	ACC	GTG	GAC	ACC	TGG	GAC	CGC	203
Gly	Phe	Ser	Ala	Pro	Ala	Gln	Ala	Ala	Thr	Val	Asp	Thr	Trp	Asp	Arg	
				35					40					45		
CTC	GCC	GAG	TGC	GAG	TCC	AAC	GGC	ACC	TGG	GAC	ATC	AAC	ACC	GGC	AAC	251
Leu	Ala	Glu	Cys	Glu	Ser	Asn	Gly	Thr	Trp	Asp	Ile	Asn	Thr	Gly	Asn	
			50					55					60			
GGC	TTC	TAC	GGC	GGC	GTG	CAG	TTC	ACC	CTG	TCC	TCC	TGG	CAG	GCC	GTC	299
Gly	Phe	Tyr	Gly	Gly	Val	Gln	Phe	Thr	Leu	Ser	Ser	Trp	Gln	Ala	Val	
		65					70					75				
GGC	GGC	GAA	GGC	TAC	CCG	CAC	CAG	GCC	TCG	AAG	GCC	GAG	CAG	ATC	AAG	347
Gly	Gly	Glu	Gly	Tyr	Pro	His	Gln	Ala	Ser	Lys	Ala	Glu	Gln	Ile	Lys	
	80					85					90					
CGC	GCC	GAG	ATC	CTC	CAG	GAC	CTG	CAG	GGC	TGG	GGC	GCG	TGG	CCG	CTG	395
Arg	Ala	Glu	Ile	Leu	Gln	Asp	Leu	Gln	Gly	Trp	Gly	Ala	Trp	Pro	Leu	
	95				100					105					110	
TGC	TCG	CAG	AAG	CTG	GGC	CTG	ACC	CAG	GCT	GAC	GCG	GAC	GCC	GGT	GAC	443
Cys	Ser	Gln	Lys	Leu	Gly	Leu	Thr	Gln	Ala	Asp	Ala	Asp	Ala	Gly	Asp	
				115					120					125		

GTG GAC GCC ACC GAG GCC GCC CCG GTC GCC GTG GAG CGC ACG GCC ACC	491
Val Asp Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr	
130 135 140	
GTG CAG CGC CAG TCC GCC GCG GAC GAG GCT GCC GCC GAG CAG GCC GCT	539
Val Gln Arg Gln Ser Ala Ala Asp Glu Ala Ala Ala Glu Gln Ala Ala	
145 150 155	
GCC GCG GAG CAG GCC GTC GTC GCC GAG GCC GAG ACC ATC GTC GTC AAG	587
Ala Ala Glu Gln Ala Val Val Ala Glu Ala Glu Thr Ile Val Val Lys	
160 165 170	
TCC GGT GAC TCC CTC TGG ACG CTC GCC AAC GAG TAC GAG GTG GAG GGT	635
Ser Gly Asp Ser Leu Trp Thr Leu Ala Asn Glu Tyr Glu Val Glu Gly	
175 180 185 190	
GGC TGG ACC GCC CTC TAC GAG GCC AAC AAG GGC GCC GTC TCC GAC GCC	683
Gly Trp Thr Ala Leu Tyr Glu Ala Asn Lys Gly Ala Val Ser Asp Ala	
195 200 205	
GCC GTG ATC TAC GTC GGC CAG GAG CTC GTC CTG CCG CAG GCC TGAGACGCCT	735
Ala Val Ile Tyr Val Gly Gln Glu Leu Val Leu Pro Gln Ala	
210 215 220	
GACCGGCCCC CCGGACCGGT ACC	758

(2) INFORMATION FOR SEQ ID NO:36:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 220 amino acids
- (B) TYPE: amino acid
- (D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:

Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala	
1 5 10 15	
Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe	
20 25 30	
Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala	
35 40 45	
Glu Cys Glu Ser Asn Gly Thr Trp Asp Ile Asn Thr Gly Asn Gly Phe	
50 55 60	
Tyr Gly Gly Val Gln Phe Thr Leu Ser Ser Trp Gln Ala Val Gly Gly	
65 70 75 80	
Glu Gly Tyr Pro His Gln Ala Ser Lys Ala Glu Gln Ile Lys Arg Ala	
85 90 95	
Glu Ile Leu Gln Asp Leu Gln Gly Trp Gly Ala Trp Pro Leu Cys Ser	
100 105 110	
Gln Lys Leu Gly Leu Thr Gln Ala Asp Ala Asp Ala Gly Asp Val Asp	
115 120 125	
Ala Thr Glu Ala Ala Pro Val Ala Val Glu Arg Thr Ala Thr Val Gln	
130 135 140	

Arg	Gln	Ser	Ala	Ala	Asp	Glu	Ala	Ala	Ala	Glu	Gln	Ala	Ala	Ala	Ala	145	150	155	160
Glu	Gln	Ala	Val	Val	Ala	Glu	Ala	Glu	Thr	Ile	Val	Val	Lys	Ser	Gly	165	170	175	
Asp	Ser	Leu	Trp	Thr	Leu	Ala	Asn	Glu	Tyr	Glu	Val	Glu	Gly	Gly	Trp	180	185	190	
Thr	Ala	Leu	Tyr	Glu	Ala	Asn	Lys	Gly	Ala	Val	Ser	Asp	Ala	Ala	Val	195	200	205	
Ile	Tyr	Val	Gly	Gln	Glu	Leu	Val	Leu	Pro	Gln	Ala					210	215	220	

(2) INFORMATION FOR SEQ ID NO:37:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 33 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:37:

GCSACSGTSG ACACSTGGGA CCGSCTSGCS GAG

33

(2) INFORMATION FOR SEQ ID NO:38:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 19 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:38:

Ala	Thr	Val	Asp	Thr	Trp	Asp	Arg	Leu	Ala	Glu	Glu	Xaa	Ser	Asn	Gly	1	5	10	15
Thr Xaa Asp																			

(2) INFORMATION FOR SEQ ID NO:39:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 18 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

CCGCCGTAGA AGCCGTTG

18

(2) INFORMATION FOR SEQ ID NO:40:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 19 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:

AGTTCACCCT GTCCTCCTG

19

(2) INFORMATION FOR SEQ ID NO:41:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 23 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION: 9
- (D) OTHER INFORMATION: /note= "N is inosine"

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION: 15
- (D) OTHER INFORMATION: /note= "N is inosine"

(ix) FEATURE:

- (A) NAME/KEY: misc_feature
- (B) LOCATION: 21
- (D) OTHER INFORMATION: /note= "N is inosine"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:

GCTTGRTGNG GRTANCCYTC NCC

23

(2) INFORMATION FOR SEQ ID NO:42:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 12 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:42:

Val	Gly	Gly	Glu	Gly	Tyr	Pro	His	Gln	Ala	Ser	Lys
1				5						10	

(2) INFORMATION FOR SEQ ID NO:43:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 182 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:43:

Ala	Thr	Val	Asp	Thr	Trp	Asp	Arg	Leu	Ala	Glu	Cys	Glu	Ser	Asn	Gly		
1				5					10					15			
Thr	Trp	Asp	Ile	Asn	Thr	Gly	Asn	Gly	Phe	Tyr	Gly	Gly	Val	Gln	Phe		
			20					25					30				
Thr	Leu	Ser	Ser	Trp	Gln	Ala	Val	Gly	Gly	Glu	Gly	Tyr	Pro	His	Gln		
		35					40					45					
Ala	Ser	Lys	Ala	Glu	Gln	Ile	Lys	Arg	Ala	Glu	Ile	Leu	Gln	Asp	Leu		
	50					55					60						
Gln	Gly	Trp	Gly	Ala	Trp	Pro	Leu	Cys	Ser	Gln	Lys	Leu	Gly	Leu	Thr		
65					70					75					80		
Gln	Ala	Asp	Ala	Asp	Ala	Gly	Asp	Val	Asp	Ala	Thr	Glu	Ala	Ala	Pro		
			85						90					95			
Val	Ala	Val	Glu	Arg	Thr	Ala	Thr	Val	Gln	Arg	Gln	Ser	Ala	Ala	Asp		
			100					105					110				
Glu	Ala	Ala	Ala	Glu	Gln	Ala	Ala	Ala	Ala	Glu	Gln	Ala	Val	Val	Ala		
		115					120					125					
Glu	Ala	Glu	Thr	Ile	Val	Val	Lys	Ser	Gly	Asp	Ser	Leu	Trp	Thr	Leu		
	130					135					140						
Ala	Asn	Glu	Tyr	Glu	Val	Glu	Gly	Gly	Trp	Thr	Ala	Leu	Tyr	Glu	Ala		
145					150				155						160		
Asn	Lys	Gly	Ala	Val	Ser	Asp	Ala	Ala	Val	Ile	Tyr	Val	Gly	Gln	Glu		
			165						170					175			
Leu	Val	Leu	Pro	Gln	Ala												
			180														

(2) INFORMATION FOR SEQ ID NO:44:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 299 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: double
- (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 3..299

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

GG ATC CGC ACC GCC GCG GTA ACC CTG GTC GCC GCG ACC GCA CTC GGG	47
Ile Arg Thr Ala Ala Val Thr Leu Val Ala Ala Thr Ala Leu Gly	
1 5 10 15	
GCG ACC GGC GAA GCG GTG GCC GCG CCC TCG GCG CCC CTG CGC ACC GAC	95
Ala Thr Gly Glu Ala Val Ala Ala Pro Ser Ala Pro Leu Arg Thr Asp	
20 25 30	
TGG GAC GCC ATC GCC GCG TGC GAG TCC AGC GGC AAC TGG CAG GCG AAC	143
Trp Asp Ala Ile Ala Ala Cys Glu Ser Ser Gly Asn Trp Gln Ala Asn	

	35	40	45	
ACC GGC AAC GGC TAC TAC GGC GGC CTG CAG TTC GCA CGG TCC AGC TGG				191
Thr Gly Asn Gly Tyr Tyr Gly Gly Leu Gln Phe Ala Arg Ser Ser Trp				
	50	55	60	
ATC GCC GCC GGC GGC CTC AAG TAC GCC CCG CGC GCG GAC CTC GCC ACC				239
Ile Ala Ala Gly Gly Leu Lys Tyr Ala Pro Arg Ala Asp Leu Ala Thr				
	65	70	75	
CGC GGC GAG CAG ATC GCC GTG GCG GAA CGC CTC GCC CGT CTG CAG GGG				287
Arg Gly Glu Gln Ile Ala Val Ala Glu Arg Leu Ala Arg Leu Gln Gly				
	80	85	90	95
ATG TCC GCC TGG				299
Met Ser Ala Trp				

(2) INFORMATION FOR SEQ ID NO:45:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 99 amino acids

(B) TYPE: amino acid

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:

Ile	Arg	Thr	Ala	Ala	Val	Thr	Leu	Val	Ala	Ala	Thr	Ala	Leu	Gly	Ala
1				5					10					15	
Thr	Gly	Glu	Ala	Val	Ala	Ala	Pro	Ser	Ala	Pro	Leu	Arg	Thr	Asp	Trp
			20					25					30		
Asp	Ala	Ile	Ala	Ala	Cys	Glu	Ser	Ser	Gly	Asn	Trp	Gln	Ala	Asn	Thr
		35					40					45			
Gly	Asn	Gly	Tyr	Tyr	Gly	Gly	Leu	Gln	Phe	Ala	Arg	Ser	Ser	Trp	Ile
	50					55					60				
Ala	Ala	Gly	Gly	Leu	Lys	Tyr	Ala	Pro	Arg	Ala	Asp	Leu	Ala	Thr	Arg
	65				70				75						80
Gly	Glu	Gln	Ile	Ala	Val	Ala	Glu	Arg	Leu	Ala	Arg	Leu	Gln	Gly	Met
			85					90						95	
Ser	Ala	Trp													

(2) INFORMATION FOR SEQ ID NO:46:

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 34 base pairs

(B) TYPE: nucleic acid

(C) STRANDEDNESS: single

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:

GTCAGAATTC ATATGGCCAC CGTGGACACC TGGG

(2) INFORMATION FOR SEQ ID NO:47:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 33 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:

TGACGGATCC TATTAGGCCT GCGGCAGGAC GAG 33

(2) INFORMATION FOR SEQ ID NO:48:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 35 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:

ATCAGAATTC ATATGGACGA CATCGATTGG GACGC 35

(2) INFORMATION FOR SEQ ID NO:49:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 29 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:

CGCAGGATCC CCTCAATCGT CCCTGCTCC 29

(2) INFORMATION FOR SEQ ID NO:50:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 23 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:50:

GAAGAGAATT CCTTCCATCA CGA 23

(2) INFORMATION FOR SEQ ID NO:51:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 22 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:51:

CCAAACGAAT TCGGTCAATC AC

22

(2) INFORMATION FOR SEQ ID NO:52:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 26 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:52:

GCAAGGATCC CAGACTAAAA AAACAG

26

(2) INFORMATION FOR SEQ ID NO:53:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 27 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:53:

ATCAGGATCC ATATTATTAG TTAAAGA

27

(2) INFORMATION FOR SEQ ID NO:54:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 663 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single stranded
 - (D) TOPOLOGY: linear

(ix) FEATURE:

- (A) NAME/KEY: CDS
- (B) LOCATION: 1..663

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:54:

atg act ctc ttc acc act tcc gcc acc cgc tcc cgc cgt gcc acc gcc	48
Met Thr Leu Phe Thr Thr Ser Ala Thr Arg Ser Arg Arg Ala Thr Ala	
1 5 10 15	
tcg atc gtc gcg ggc atg acc ctc gcc ggc gcc gcc gcc gtg ggc ttc	96
Ser Ile Val Ala Gly Met Thr Leu Ala Gly Ala Ala Ala Val Gly Phe	
20 25 30	
tcc gcc ccg gcc cag gcc gcc acc gtg gac acc tgg gac cgc ctc gcc	144
Ser Ala Pro Ala Gln Ala Ala Thr Val Asp Thr Trp Asp Arg Leu Ala	
35 40 45	
gag tgc gag tcc aac ggc acc tgg gac atc aac acc ggc aac ggc ttc	192

Glu	Cys	Glu	Ser	Asn	Gly	Thr	Trp	Asp	Ile	Asn	Thr	Gly	Asn	Gly	Phe	
50						55					60					
tac	ggc	ggc	gtg	cag	ttc	acc	ctg	tcc	tcc	tgg	cag	gcc	gtc	ggc	ggc	240
Tyr	Gly	Gly	Val	Gln	Phe	Thr	Leu	Ser	Ser	Trp	Gln	Ala	Val	Gly	Gly	
65					70				75					80		
gaa	ggc	tac	ccg	cac	cag	gcc	tcg	aag	gcc	gag	cag	atc	aag	cgc	gcc	288
Glu	Gly	Tyr	Pro	His	Gln	Ala	Ser	Lys	Ala	Glu	Gln	Ile	Lys	Arg	Ala	
				85					90					95		
gag	atc	ctc	cag	gac	ctg	cag	ggc	tgg	ggc	gcg	tgg	ccg	ctg	tgc	tcg	336
Glu	Ile	Leu	Gln	Asp	Leu	Gln	Gly	Trp	Gly	Ala	Trp	Pro	Leu	Cys	Ser	
			100					105					110			
cag	aag	ctg	ggc	ctg	acc	cag	gct	gac	gcg	gac	gcc	ggt	gac	gtg	gac	384
Gln	Lys	Leu	Gly	Leu	Thr	Gln	Ala	Asp	Ala	Asp	Ala	Gly	Asp	Val	Asp	
		115					120					125				
gcc	acc	gag	gcc	gcc	ccg	gtc	gcc	gtg	gag	cgc	acg	gcc	acc	gtg	cag	432
Ala	Thr	Glu	Ala	Ala	Pro	Val	Ala	Val	Glu	Arg	Thr	Ala	Thr	Val	Gln	
		130				135					140					
cgc	cag	tcc	gcc	gcg	gac	gag	gct	gcc	gcc	gag	cag	gcc	gct	gcc	gcg	480
Arg	Gln	Ser	Ala	Ala	Asp	Glu	Ala	Ala	Ala	Glu	Gln	Ala	Ala	Ala	Ala	
145					150					155					160	
gag	cag	gcc	gtc	gtc	gcc	gag	gcc	gag	acc	atc	gtc	gtc	aag	tcc	ggt	528
Glu	Gln	Ala	Val	Val	Ala	Glu	Ala	Glu	Thr	Ile	Val	Val	Lys	Ser	Gly	
				165					170					175		
gac	tcc	ctc	tgg	acg	ctc	gcc	aac	gag	tac	gag	gtg	gag	ggt	ggc	tgg	576
Asp	Ser	Leu	Trp	Thr	Leu	Ala	Asn	Glu	Tyr	Glu	Val	Glu	Gly	Gly	Trp	
			180					185					190			
acc	gcc	ctc	tac	gag	gcc	aac	aag	ggc	gcc	gtc	tcc	gac	gcc	gcc	gtg	624
Thr	Ala	Leu	Tyr	Glu	Ala	Asn	Lys	Gly	Ala	Val	Ser	Asp	Ala	Ala	Val	
		195					200					205				
atc	tac	gtc	ggc	cag	gag	ctc	gtc	ctg	ccg	cag	gcc	tga				663
Ile	Tyr	Val	Gly	Gln	Glu	Leu	Val	Leu	Pro	Gln	Ala					
	210					215					220					

(2) INFORMATION FOR SEQ ID NO:55:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 6 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:55:

Ala Pro Pro Ala Asp Leu
1 5

(2) INFORMATION FOR SEQ ID NO:56:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 7 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:56:

Ala Pro Ala Ser Ala Asp Leu
1 5

(2) INFORMATION FOR SEQ ID NO:57:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 8 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:57:

Ala Pro Pro Ala Pro Ala Glu Leu
1 5

(2) INFORMATION FOR SEQ ID NO:58:

B'
(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:

Ala Pro Pro Ala
1

(2) INFORMATION FOR SEQ ID NO:59:

(i) SEQUENCE CHARACTERISTICS:
(A) LENGTH: 4 amino acids
(B) TYPE: amino acid
(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:

Ala Val Asn Asp
1